# Digital Ground Resistance Tester Model 4500


The Digital Ground Resistance Tester Model 4500 is designed for measuring very low resistance on large grounding systems, such as ground grids and ground mats.

It rejects high levels of interference voltages at DC or 60Hz and its harmonics, and can be used under difficult conditions such as high stray currents or excessive auxiliary electrode resistance without substantially affecting accuracy.

The Model 4500 has three selectable test current ranges (2, 10, 50mA) and five selectable resistance testing ranges (2Ω, 20Ω, 200Ω, 2000Ω and 20kΩ). It is capable of direct readings with a resolution as low as 1mΩ.

With such a wide resistance capability, the Model 4500 is capable of measuring the resistivities of soil and other materials from below 10mΩ-cm to over 1MΩ-cm.

Readings are displayed on a large (0.71"), $3^1/_2$ digit LCD. The LCD blinks and a pointer on the display lights to warn of excess stray current or auxiliary electrode resistance, or when there is a lack of continuity between leads and electrodes. A beeper will notify the user if voltage greater than 20 volts peak is present between terminals X (C1) and Y (P2) or X and Z (C2) when the ground leads are connected.

The instrument is fuse protected up to 500AAC to protect the instrument against voltage into the test leads.

Power is supplied by a rechargeable 12V battery; the tester may also be operated from an external 12VDC supply. A battery charge indicator and low battery indicator appear on the LCD and a dual-voltage charging unit is built into the instrument.

The heavy-duty, safety yellow case is dust and water resistant to ensure reliable field use. The cover may be detached while the meter is in use, if desired. Optional test kits are available for ground resistance and soil resistivity tests.

## Features

- Measures soil resistivvity (4-Point)
- Measure ground resistance (2- and 3-Point) Fall-of-Potential Method
- Step voltage tests and touch potential measurements
- Selectable: three test currents and five resistance ranges
- Measures very low resistance on large grounding systems and grids
- High test current also enables geological surveys
- Large easy-to-read LCD
- Display includes indicators for excess stray current and voltage, high auxiliary rod resistance and fault connection
- Battery (rechargeable) powered or external 12VDC
- Rugged dustproof and rainproof field case
- Can be used for continuity tests on bonding
- Includes power cord, 12V NiCD battery, hex key, spare fuse and user manual

## Applications

- Three-point measurement of large grounding grids, counterpoises, ground mats and grounded equipment.
- Soil resistivity tests (4-Point measurement), commonly performed by utilities at proposed construction sites. Using soil resistivity analysis, the size and complexity of grounding system construction can be evaluated. The Ground Resistance Tester Model 4500 will measure the resistivity of epoxies, cement, ground enhancement materials and many other substances.
- Step or touch potential levels under true fault conditions can be determined by using the Model 4500 to inject a simulated low-level fault into an electrical system. When used in this fashion, the Model 4500 will display readings in volts per fault ampere.
- Two-point tests for continuity tests on bonding or on pre-established grounds.

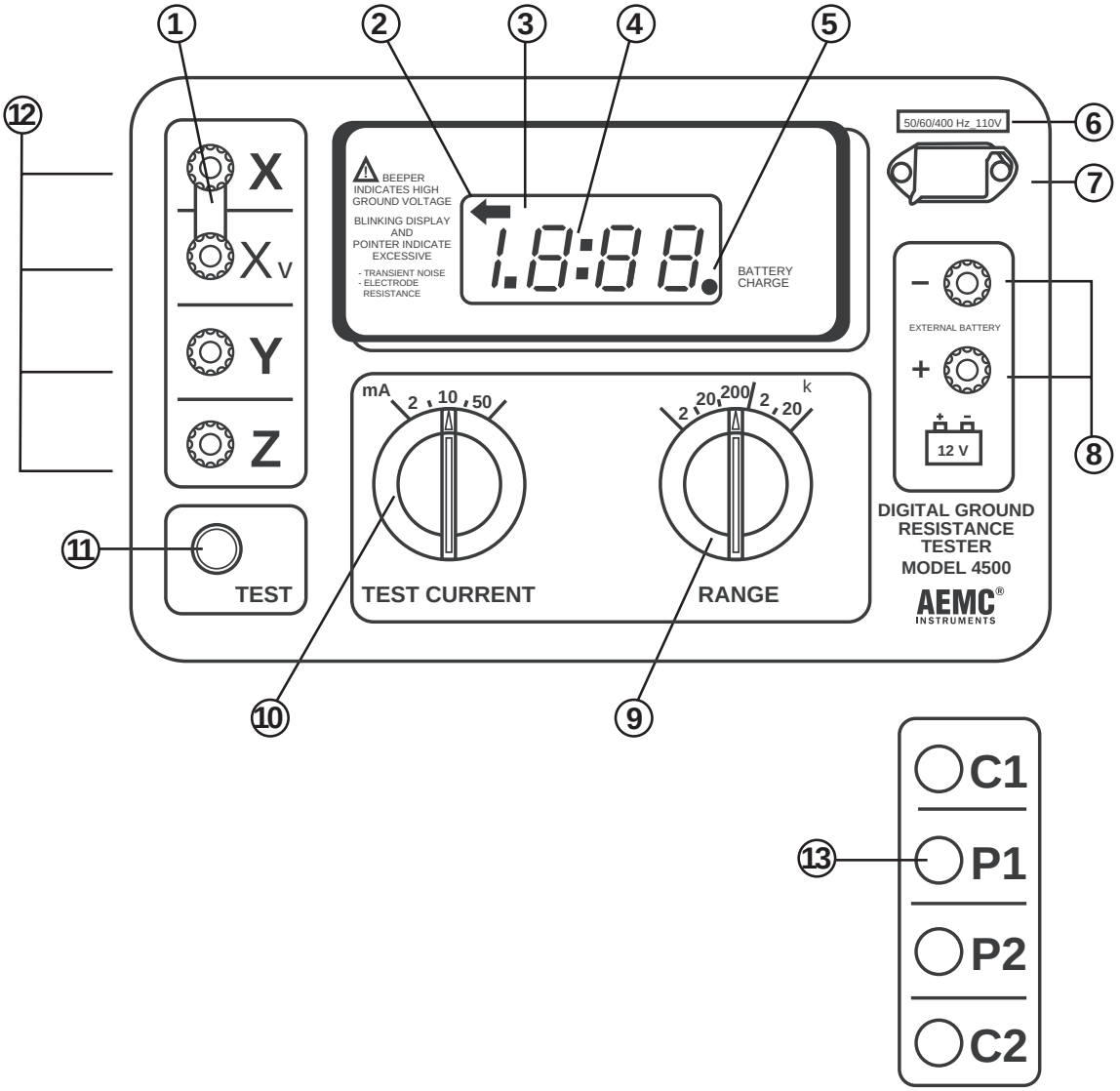
## Specifications

| ELECTRICAL | | | | | |
|---|---|---|---|---|---|
| **Ranges** | 2Ω | 20Ω | 200Ω | 2000Ω | 20kΩ |
| **Resolution** | 1mΩ | 10mΩ | 0.1Ω | 1Ω | 10Ω |
| **Resistance Measurement Frequency** | 128Hz square wave | | | | |
| **Test Current** | 2mA, 10mA, 50mA | | | | |
| **Accuracy** | ±2% of Reading ± 1ct from 10% to 100% of range | | | | |
| **Auxiliary Electrode Resistance** | Ry: 50kΩ on 20Ω, 200Ω, 2000Ω & 20kΩ ranges; 5kΩ on 2Ω range<br>Rz: 2mA range: 15kΩ; 10mA range: 3000Ω; 50mA range: 400Ω | | | | |
| **Interference** | The unit is designed to reject high levels of interference voltages at DC, or 50/60 Hz and their harmonics | | | | |
| **Noise Influence on Accuracy** | 0.5% of range (max) to 20V peak | | | | |
| **Power Source** | Built-in rechargeable 12V, one Ah NiCD battery, or external 12 VDC; low battery indication.<br>Battery can be recharged with built-in dual voltage charging unit:<br>94 to 127V or 187 to 253V (47 to 450Hz) | | | | |
| **Charging Time** | 14 hours typical | | | | |
| **Charging Supply Voltage** | Internally selectable 110/220V, 45 to 450Hz | | | | |
| **Battery Life** | Four hrs on 50mA test current (800 15 sec measurements),<br>Seven hrs on 2mA and 10mA test currents (1500 15 sec. measurements) | | | | |
| **Fuse Protection** | 500Vrms measurement circuit | | | | |
| **MECHANICAL** | | | | | |
| **Display** | 7-segment LCD, 0.71" (18mm) high (3½ digit); 2000-count | | | | |
| **Connection** | Terminals accept spade lugs with min. gap of 6mm or standard 4mm banana jacks | | | | |
| **Operating Temperature** | 14° to 122°F (-10° to 50°C) | | | | |
| **Dimensions** | 15.75 x 10.2 x 9.8" (400 x 260 x 250mm) | | | | |
| **Weight** | 14 lbs (6.5kg) approximate | | | | |
| **Case** | Heavy-duty plastic, with detachable cover and carrying handle | | | | |
| **Colors** | Case: safety yellow; Front panel: brown | | | | |
| **Dielectric Test** | 2000Vrms, 50/60Hz between 4 interconnected measuring terminals and any external metal ground; 2000Vrms, 50/60Hz between line input and measuring terminals on front panel | | | | |
| **Environmental** | O-ring sealed faceplate against water and dust; sealed cover when closed; IEC529, DIN 0470-T1 | | | | |
| **SAFETY** | | | | | |
| **Rating** | EN 61010 | | | | |
| **Double Insulation** ⧈ | Yes | | | | |
| **Impact Resistance** | Shock and vibration according to MIL-T-28800D class 3 | | | | |
| **CE Mark** | Yes | | | | |

# Accessories


*Test Kit includes 30 ft lead,*
*canvas bag, two 500 ft reels,*
*two 16" auxiliary ground electrodes*
*Catalog #100.525*


*Test Kit includes two 100 ft leads,*
*one 16 ft lead, two 16" auxiliary*
*ground electrodes, canvas bag*
*Catalog #2130.61*







1. Ground resistance measurement strip
2. Incorrect measurement indicator
3. Display
4. Low battery indicator
5. Battery change indicator
6. Supply voltage indicator
7. AC power supply input jack
8. Connecting terminals for external 12VDC
9. Range selector
10. Test current selector
11. Push-to-Measure
12. Input Measurement Terminals
13. Adhesive label for C-1, P-1, P-2, C-2 terminal option

## ORDERING INFORMATION — CATALOG NO.

**Ground Resistance Tester Model 4500** (4-Point Digital) . . . . . **Cat. #450.100**
Includes batteries, AC supply cord and user manual

**Accessories (Optional)**

Test Kit for Model 4500 includes carrying bag, set of two 500 ft leads on orange reels, one 30 ft lead, two auxiliary ground electrodes . . . . . Cat. #100.525

Ground Test Kit – 3-Point (supplementa 4-Point) includes carrying bag, two 100 ft color-coded leads, one 16 ft lead and two 16 " auxiliary ground electrodes . . . . . Cat. #2130.61

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